Navajo Abandoned Uranium Mine

Site Screen Report

This form is for use at the site of abandoned uranium mines (AUM) located on Navajo Nation lands. Applicable sites include all mine and mine features that have or have not undergone reclamation by the Navajo Abandoned Mine Lands Reclamation Program, including features, adits, pits and waste piles. Applicable sites also include all AUM sites listed in the USEPA CERCLIS database, all sites listed in the 2008 AUM GIS Report issued by USACOE and USEPA, all AUM sites on allotment lands associated with the Navajo Nation, and any and all AUM sites not listed in any database located on Navajo lands. Reconnaissance of any sites located on lands adjacent to Navajo lands that may be impacting Navajo lands will need to be coordinated with the authorities appropriate to those lands.

The purpose of the form is to ascertain the status and location of the identified AUM site, and record all immediate site information associated with the mine site. Decisions and recommendations on what additional steps are needed will be provided on a separate document.

Cove Mesa Mines (Cato Sells) AUM Site

Navajo AUM Northern Region

Prepared by:

Weston Solutions, Inc.

Contract: W91238-06-F-0083

12767.063.496.1111

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Part I Site Identification, Location and Status

Site Names and ID numbers as applicable

Mine ID: 34, 35, 36

Map ID: #34 - N112
#35 - N111
#36 - N110

CERCLIS: NNN000908838

Navajo Abandoned Mine Land Reclamation Program: #34 – NA-0308
#35 – NA-0341
#36 – NA-0308

Local name / Aliases: MP-56; MP-547; Cove Mesa #1; Cove Mesa Mines No. 1 and 2

Chapter and local area: #34 - Red Valley Chapter
35 - Red Valley Chapter
#36 - Sweetwater Chapter

County: Apache **State:** Arizona

Lat/Long: #34 - 36.6496903779 N / -109.270697374 W
#35 - 36.6517100962 N / -109.269003596 W
#36 - 36.6522271361 N / -109.278244296 W

Nearby road and highway: Indian Route 332, IR 1040 **Local Post Office:** Red Valley, AZ

Surface Land Status: check one or more and provide ownership and contact information below

Tribal Trust Land	☒	**Public lands**	☐
Private	☐	**Tribal Fee Land**	☐
Bureau of Land Mgmt	☐	**Allotment**	☐
State	☐	**Fee land**	☐

Subsurface Mineral Rights:

No information on subsurface mineral rights ownership was found in the EPA/AUM Database.

Claim and operator information:

The mine site surface land status is classified as Tribal Trust Land. Historical documents showed the operator of the mine as Cato Sells (Vanadium Corp. of America) from 1950 to 1965. No other historical ownership / lease information was identified in the EPA/AUM database.

Number of residential structures within 200 feet of mine: None

Estimated volume of mine waste onsite: #34 – 2,778 yd^3
#35 – 925 yd^3
#36 – 1,620 yd^3

Part II Summary of radiological readings

Mine ID # 34

Highest gamma radiation measurement:

113,713 counts per minute (cpm)

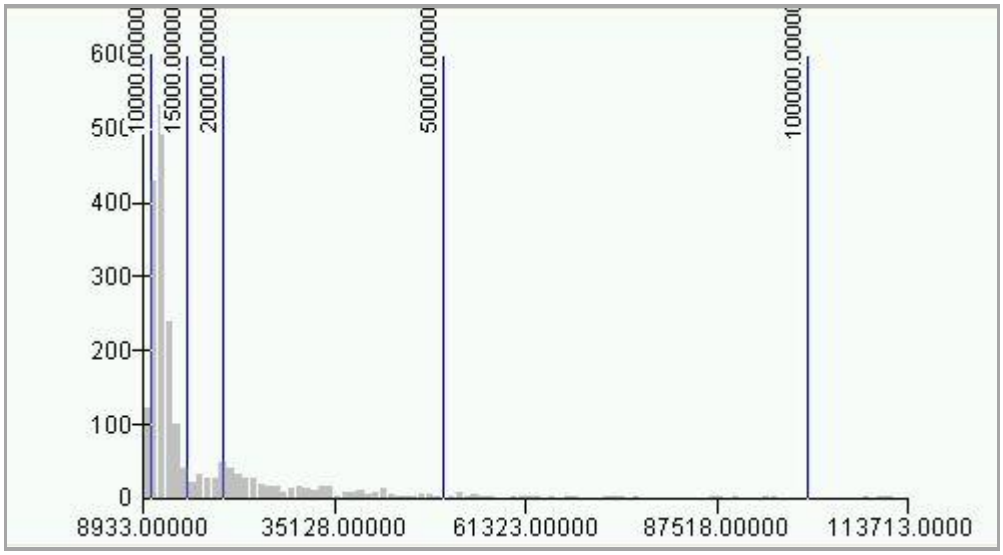
Describe any other radiological measurements:

A total of 2,059 gamma radiation measurements were collected from the mine site, ranging from 8,933 cpm to 113,713 cpm. Measurements in the vicinity of the waste debris were found at levels of approximately 110,000 cpm. The measurements are represented in Figures 2 and 3.

Background Locations **Average background** = 10,292 cpm
#1 10,185 cpm
#2 10,298 cpm

Distribution Chart and Statistics:

The following chart and statistics were generated by ESRI ArcGIS 9.3.1, and show the general distribution of the site gamma radiation measurements. The horizontal X axis represents the gamma radiation reading levels in cpm (lowest levels to the left). The vertical Y axis represents the frequency of each gamma radiation level.



Count:	2059
Minimum:	8933.00000
Maximum:	113713.00000
Sum:	36435620.00000
Mean:	17695.78436
Median:	11962.00000
Standard Deviation:	14368.51886

Mine ID # 35

Highest gamma radiation measurement:

79,716 counts per minute (cpm)

Describe any other radiological measurements:

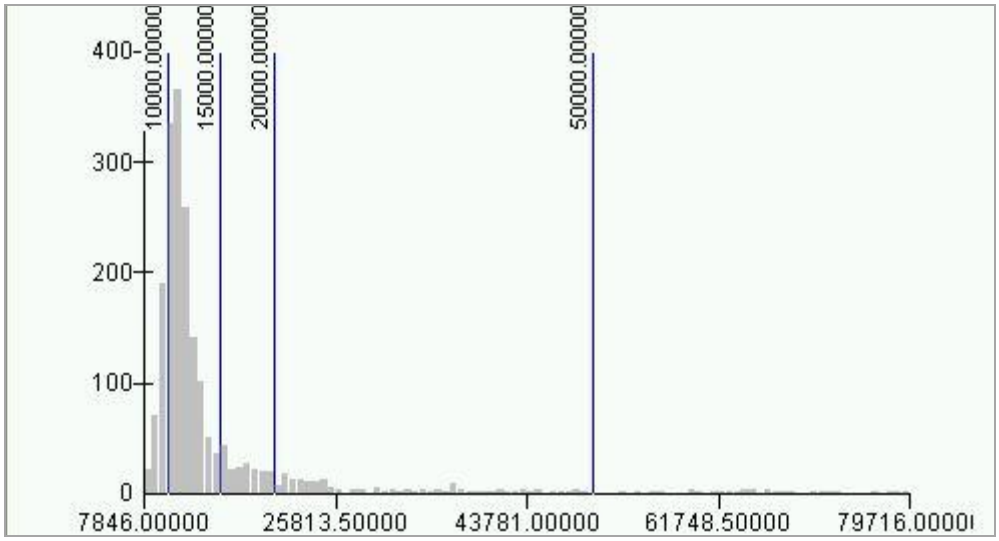
A total of 1,951 gamma radiation measurements were collected from the mine site, ranging from 7,846 cpm to 79,716 cpm. Measurements in the vicinity of the waste debris were found at levels of approximately 47,000 cpm. The measurements are represented in Figures 4 and 5.

Background Locations **Average background** = 10,963 cpm

#1 11,476 cpm
#2 10,450 cpm

Distribution Chart and Statistics:

The following chart and statistics were generated by ESRI ArcGIS 9.3.1, and show the general distribution of the site gamma radiation measurements. The horizontal X axis represents the gamma radiation reading levels in cpm (lowest levels to the left). The vertical Y axis represents the frequency of each gamma radiation level.



Count:	1951
Minimum:	7846.00000
Maximum:	79716.00000
Sum:	28033405.00000
Mean:	14368.73655
Median:	11428.00000
Standard Deviation:	9621.32874

Mine ID # 36

Highest gamma radiation measurement:

63,016 counts per minute (cpm)

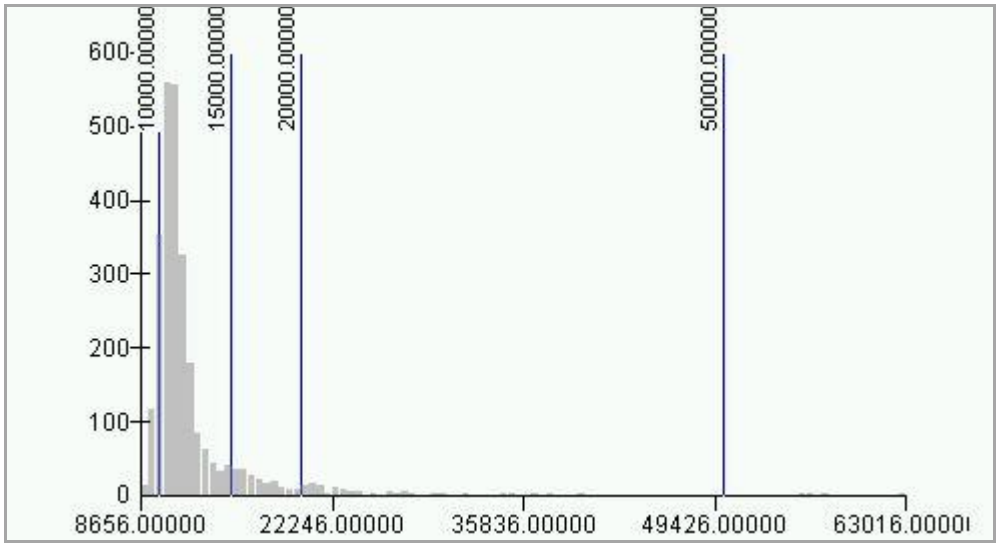
Describe any other radiological measurements:

A total of 2,694 gamma radiation measurements were collected from the mine site, ranging from 8,656 cpm to 63,016 cpm. Measurements in the vicinity of the waste debris were found at levels of approximately 30,000 cpm. The measurements are represented in Figures 6 and 7.

Background Locations **Average background** = 11,248 cpm
#1 11,262 cpm
#2 11,234 cpm

Distribution Chart and Statistics:

The following chart and statistics were generated by ESRI ArcGIS 9.3.1, and show the general distribution of the site gamma radiation measurements. The horizontal X axis represents the gamma radiation reading levels in cpm (lowest levels to the left). The vertical Y axis represents the frequency of each gamma radiation level.



Count:	2694
Minimum:	8656.00000
Maximum:	63016.00000
Sum:	33928944.00000
Mean:	12594.26281
Median:	11110.50000
Standard Deviation:	5379.50334

Part III Status of Reclamation and Mine Waste

Mine ID #34

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed : Yes **Waste Pile onsite :** No

NAMLRP Project Number: NA-0308

NAMLRP Mine features: 1 Portal

The following information was obtained from field observations collected during the 2009 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits
None

Waste Piles
Clay/waste pile on east side of site, approximately 100' x 75' x 10' height, with a total estimated volume of 2,778 yd^3

Pits
None

Shafts
None

Other Debris and Mine Features
None

Mine ID #35

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed : Yes **Waste Pile onsite :** No

NAMLRP Project Number: NA-0341

NAMLRP Mine features: 2 Portals, 2 Rim Strip/Pits

The following information was obtained from field observations collected during the 2009 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits
None

Waste Piles
Clay/waste pile, approximately 50' x 50', with a total estimated volume of 925 yd^3

Pits
None

Shafts
None

Other Debris and Mine Features
None

Mine ID #36

The following information was obtained from the Navajo Abandoned Mine Land Reclamation Program (NAMLRP) Point Features Database:

NAMLRP Status of the mine site: Reclaimed : Yes **Waste Pile onsite :** Yes

NAMLRP Project Number: NA-0308

NAMLRP Mine features: 4 Portals

The following information was obtained from field observations collected during the 2009 site screening:

Provide description and status of all mine sites and features at site. Include all waste piles, adits, pits and other features, and indicate whether they are open, closed, covered, capped, buried or unreclaimed. Indicate approximate size, shape and extent, including description of any reclamation caps. Note condition of all caps.

Observed reclamation work and status:

Adits
None

Waste Piles
2 waste piles on east edge of site: approximately 50'x50'; 125' x 50'; with a total estimated volume of 1,620 yd^3

Pits
None

Shafts
None

Other Debris and Mine Features
None

Part IV

Site observations and Environs

Observed Structures: list number of and describe human habitation status of structures at the following distances from mine:

0 to 200 feet: None

200 feet to 0.25 mile: None

Observed Public or commercial structure: list and describe all schools, clinics, Chapter Houses, places of business and any other structure used by members of the community at the following distances:

0 to 200 feet: None

200 feet to 0.25 mile: None

Levels measured around the perimeter(s) of the identified structure(s): None

Observed water sources: list the number and type of wells and surface water sources that are potentially used for human consumption at the following distances from the mine:

0 to 0.25 miles: None

0.25 miles to 4 miles: None

Sensitive environments: note and describe all sensitive environments located within visible range of the mine site, including: wetlands, endangered species, habitats and approximate locations of sites that may be under protection of the government of the Navajo Nation.

None observed

Known Site History: include information from interviews with Chapter officials and residents. Note information on mine ownership, type of mining operation, period of operation, known amount of production, and any other information as provided.

Cove Mesa Mines (Cato Sells) consists of 3 mine sites with a total area of 38,832.74 m^2 (#34 – 3,573.51 m^2, #35 – 11,340.35 m^2, #36 – 23,918.69 m^2). The mine was identified as being operational from 1950 to 1965. Historical documents showed the operator of the mine as Cato Sells (Vanadium Corp. of America) from 1950 to 1965. While operational, the mine had a total reported production volume of 2,713 tons. No other historical information or any additional ownership / lease information was identified in the EPA/AUM database.

Part V Response Action Summary

Site Name(s): Cove Mesa Mines (Cato Sells) **Chapter:** Red Valley, Sweetwater.

Decision Criteria

Is there an unreclaimed waste pile at the site? Yes

At what distance from the waste pile is the nearest residential structure located? None

At what distances from the waste pile are there potential drinking water sources? None

Is there a reclamation cap or sealed adit in place at the site? None

Is the cap/seal functionally intact? None

Is the cap/seal sufficiently degraded to create a concern about releases? No

At what distance from the cap/seal is the nearest domestic structure located? None

At what distance from the cap/seal is the nearest domestic drinking water source? None

Summary of emergency response factors

None

Summary hazard ranking system factors

None

Summary of reclamation factors

Waste piles found at each site

Part VI Photos

Photo 1. Site #34 – Mixed waste/clay pile

Photo 2. Site #34 – Mine site

Photo 3. Site #34 – Mine site

Photo 4. Site #35 – Mine site

Photo 5. Site #35 – Clay pile

Photo 6. Site #35 – Mine site

Photo 7. Site #36 – Waste pile and cliff area

Photo 8. Site #36 – Mine site

Photo 9. Site #36 – Waste pile and cliff area

Part VII Contacts Reports and Information

Name: Stanley Edison (928) 871-6861

Eugene Esplain (928) 871-7331

Title or official role (if any) Navajo EPA Superfund Program

Address___PO Box 2946, Window Rock, AZ 86515

Information provided Lead Regulatory Agency

Name_____

Title or official role (if any) _____

Address_____

Telephone number_____

Information provided_____

Name_____

Title or official role (if any) _____

Telephone number_____

Information provided_____

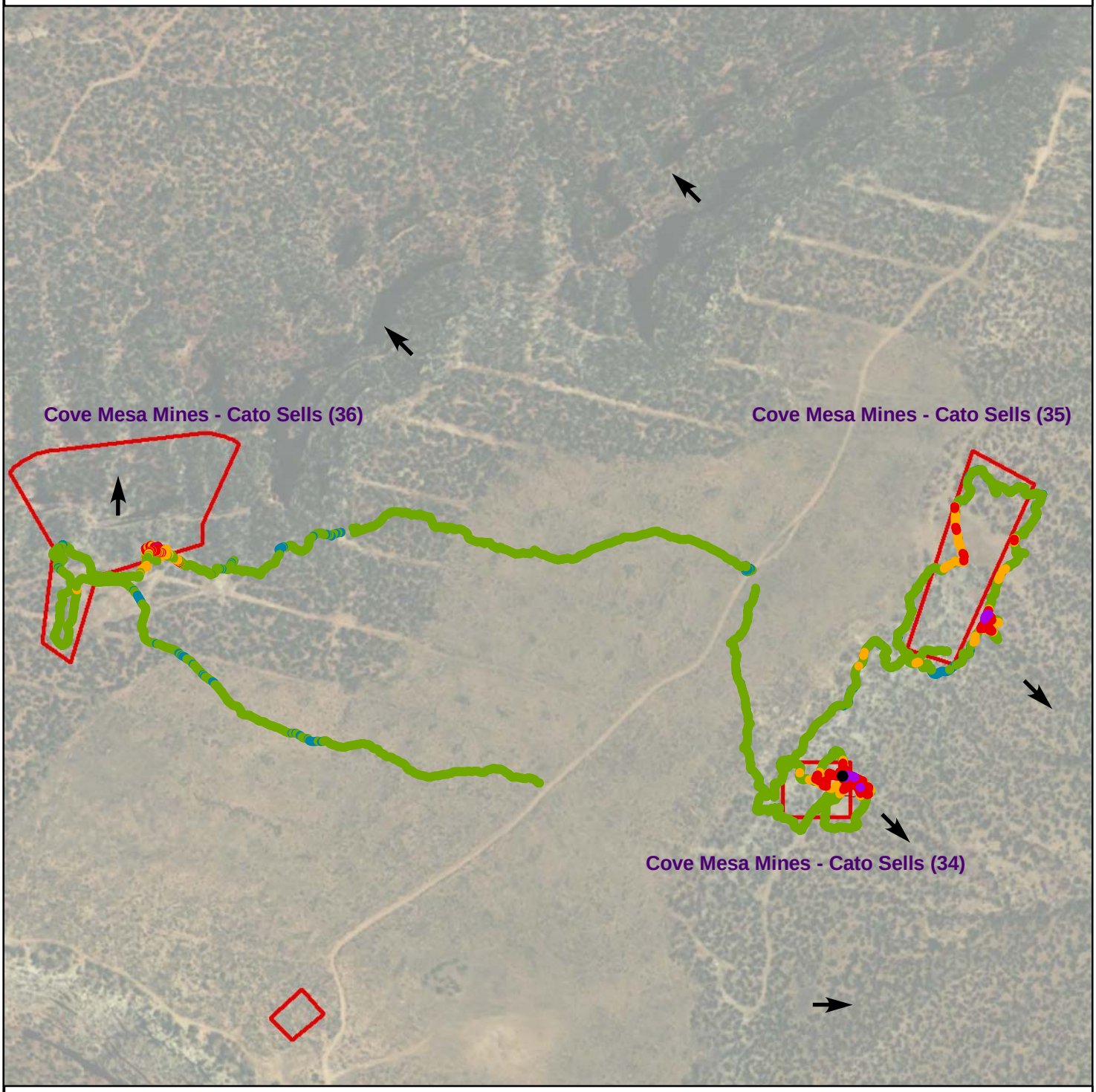
Name_____

Title or official role (if any) _____

Telephone number_____

Information provided_____

Figure 1 - Gamma Radiation Measurements
Cove Mesa Mines - Cato Sells (34, 35, 36)
Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- 0 - 10,000
- 10,000 - 15,000
- 15,000 - 20,000
- 20,000 - 50,000
- 50,000 - 100,000
- > 100,000

General Direction Down-Slope

Mine Claim Boundaries

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

N

Feet

0 500

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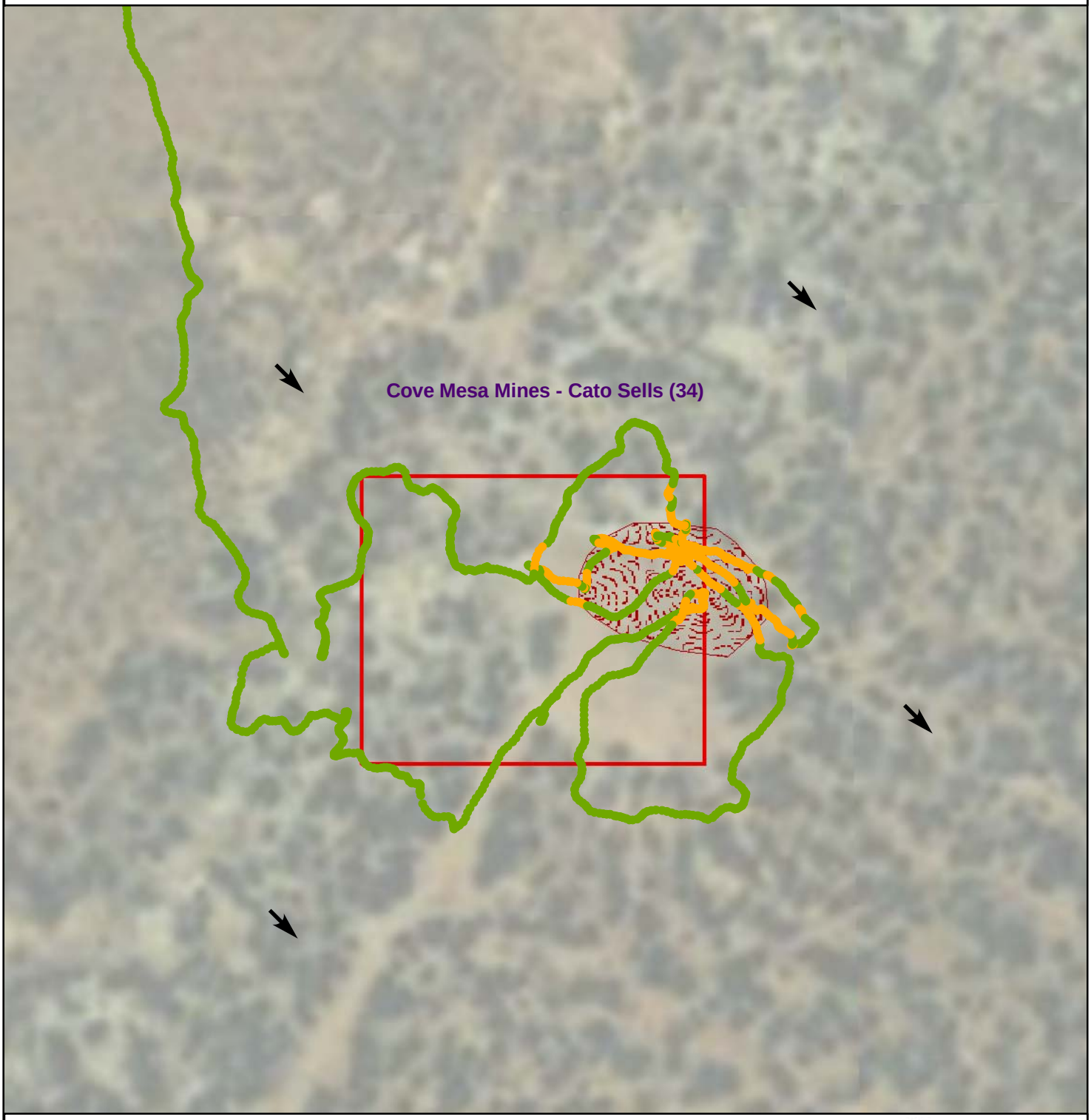
Figure 2 - Gamma Radiation Measurements, Above Two Times Background
Cove Mesa Mine - Cato Sells (34)
Red Valley Chapter, Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- < 2X Backgound
- > 2X Background

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 10,292 cpm

Observed Waste Pile

General Direction Down-Slope

Mine Claim Boundaries

N

Feet

0 100

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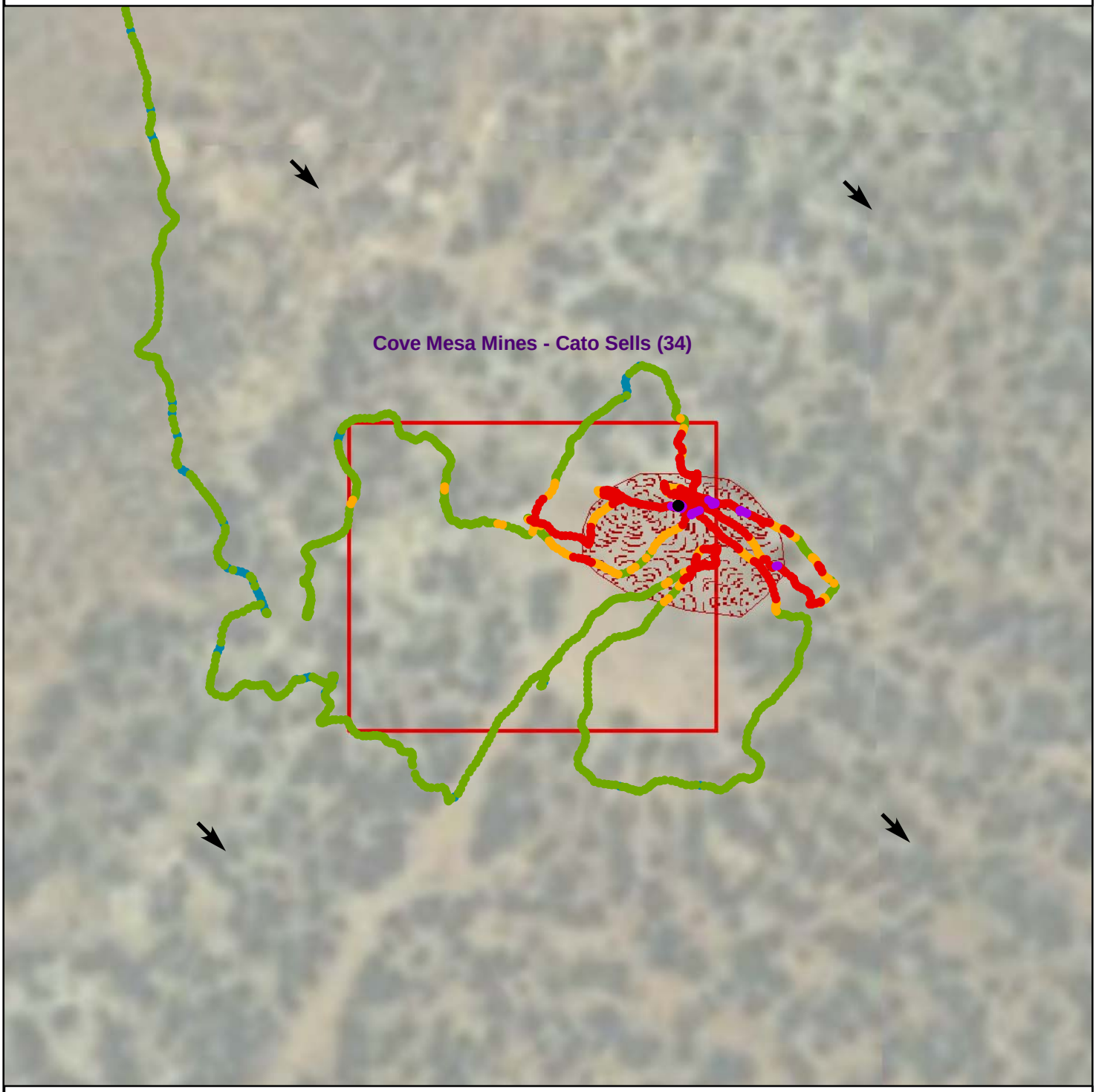
Figure 3 - Gamma Radiation Measurements
Cove Mesa Mines - Cato Sells (34)
Red Valley Chapter, Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- 0 - 10,000
- 10,000 - 15,000
- 15,000 - 20,000
- 20,000 - 50,000
- 50,000 - 100,000
- > 100,000

Observed Waste Pile

General Direction Down-Slope

Mine Claim Boundaries

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 10,292 cpm

N

Feet

0 100

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Figure 4 - Gamma Radiation Measurements, Above Two Times Background
Cove Mesa Mine - Cato Sells (35)
Red Valley Chapter, Navajo Nation, Arizona

Legend

Gamma Radiation Measurements

- < 2X Backgound
- > 2X Background

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 10,963 cpm

Reclamation Cap

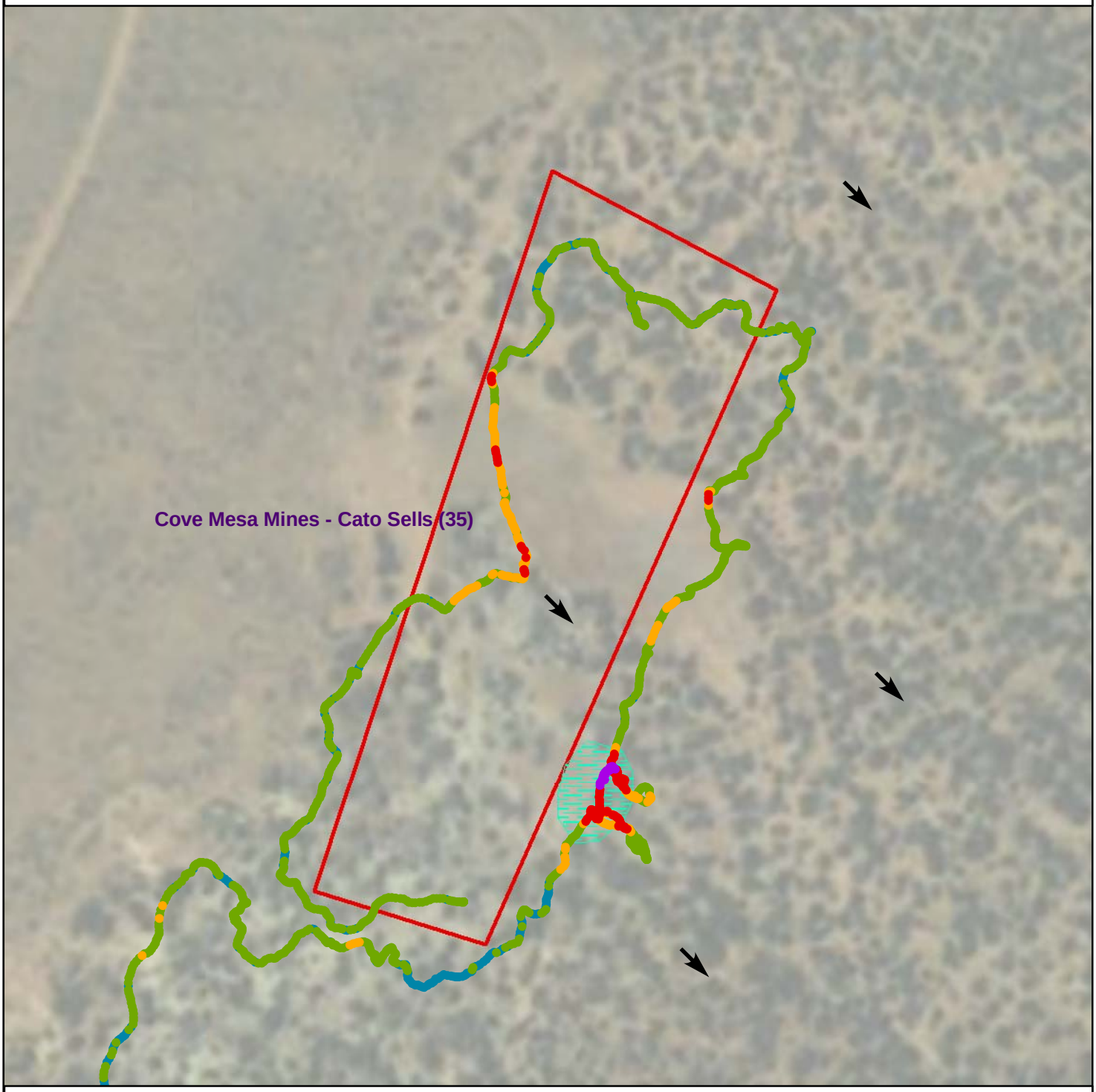
General Direction Down-Slope

Mine Claim Boundaries

N

0 150 **Feet**

Figure 5 - Gamma Radiation Measurements
Cove Mesa Mines - Cato Sells (35)
Red Valley Chapter, Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- 0 - 10,000
- 10,000 - 15,000
- 15,000 - 20,000
- 20,000 - 50,000
- 50,000 - 100,000
- > 100,000

Reclamation Cap

General Direction Down-Slope

Mine Claim Boundaries

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 10,963 cpm

N

Feet

0 150

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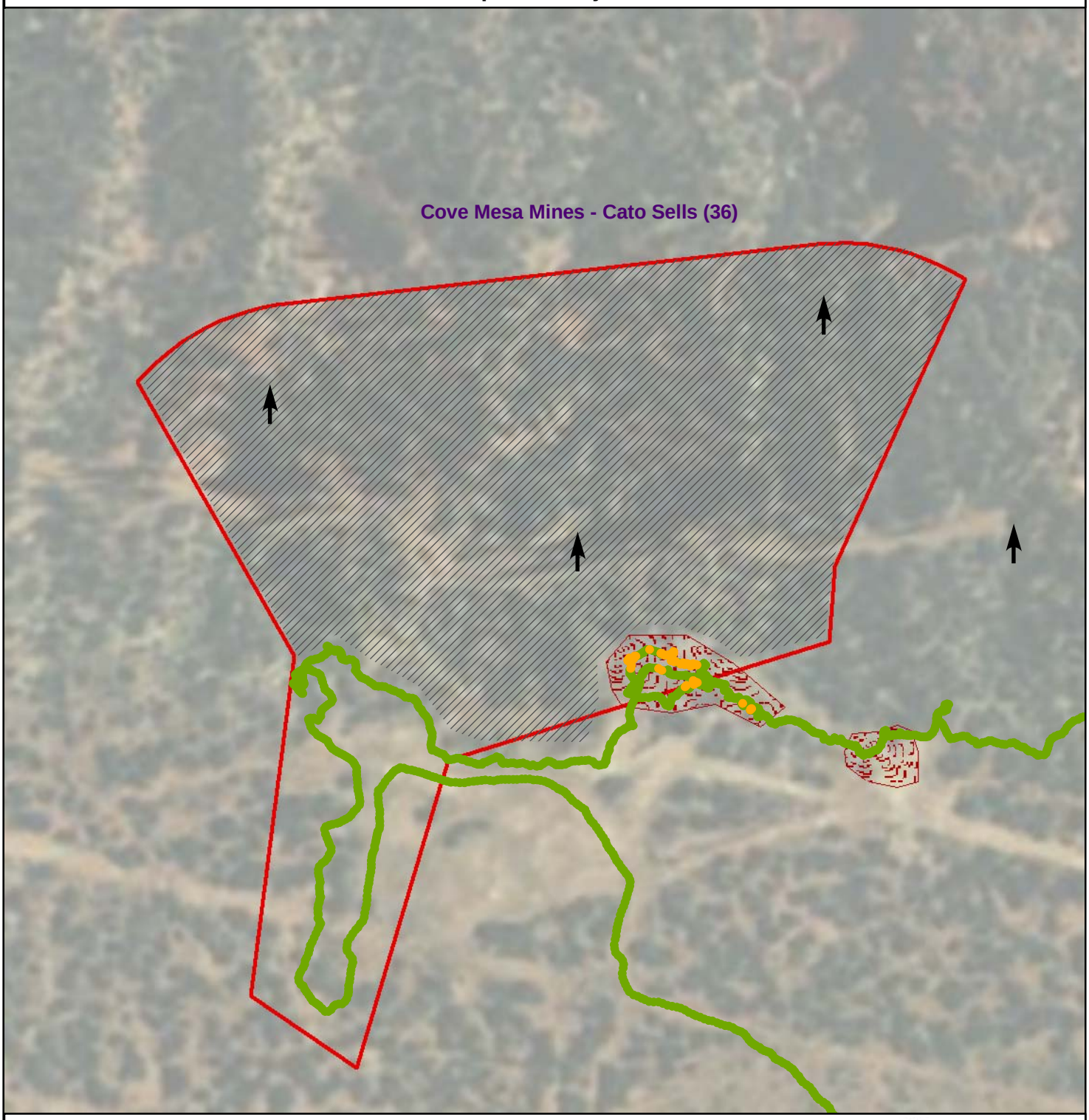
Figure 6 - Gamma Radiation Measurements, Above Two Times Background
Cove Mesa Mine - Cato Sells (36)
Sweetwater Chapter, Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- < 2X Backgound
- > 2X Background

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 11,248 cpm

Observed Waste Pile

Inaccessible due to steep grades

General Direction Down-Slope

Mine Claim Boundaries

N

Feet

0 **150**

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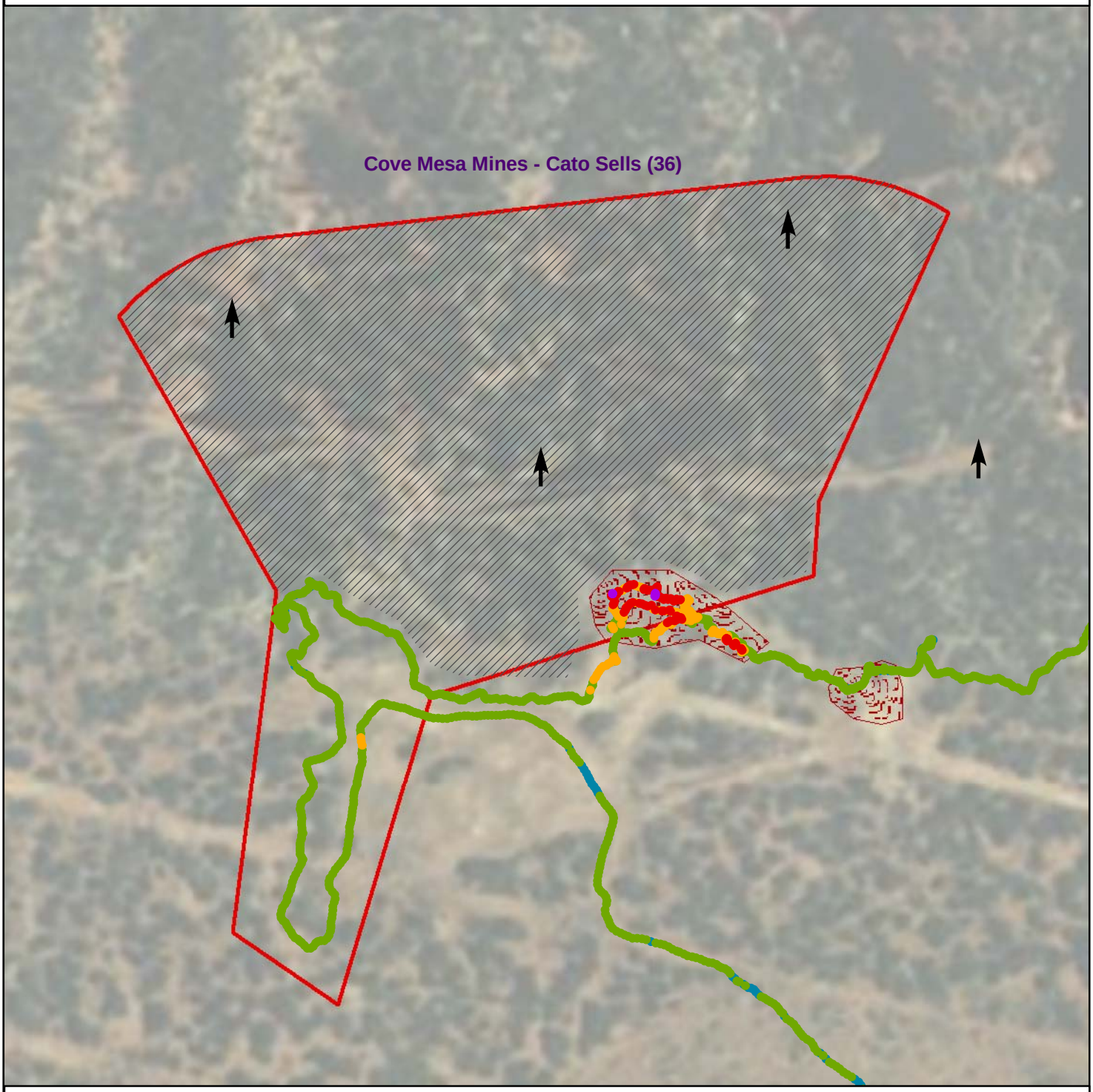
Figure 7 - Gamma Radiation Measurements
Cove Mesa Mines - Cato Sells (36)
Sweetwater Chapter, Navajo Nation, Arizona



Legend

Gamma Radiation Measurements

- 0 - 10,000
- 10,000 - 15,000
- 15,000 - 20,000
- 20,000 - 50,000
- 50,000 - 100,000
- > 100,000

Observed Waste Pile

Inaccessible due to steep grades

General Direction Down-Slope

Mine Claim Boundaries

Gamma survey conducted 10/2009
Measured as counts per minute (cpm)

Average background = 11,284 cpm

N

Feet

0 150

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